User manual

of PUE C/31H/EX indicator

applicable in:
WPT……../EX,
WTC……./EX.

Manual number:
EXI-01-04-06-14-GB

BALANCES AND SCALES

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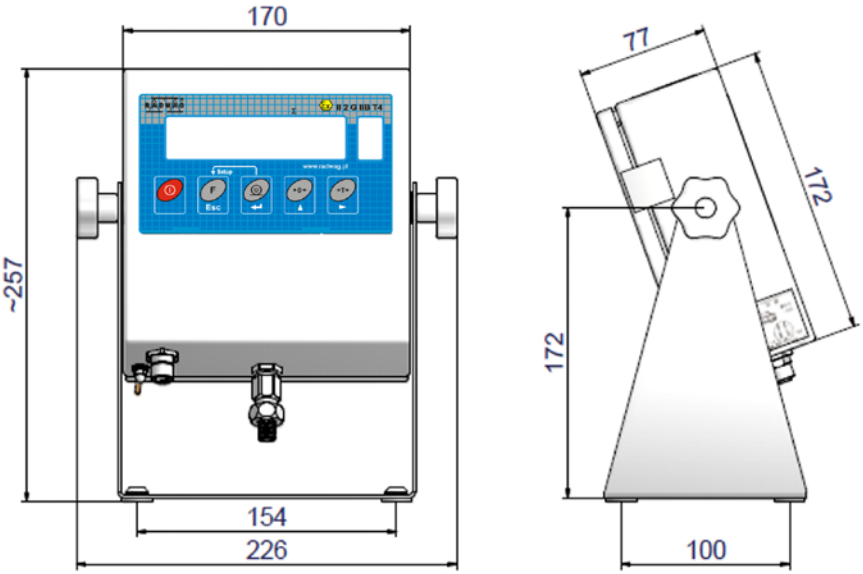
1. DESIGN AND INTENDED USE

Indicator of PUE C/31H/EX type, in cooperation with a weighing platform, is intended for fast and precise measurements performed in explosive areas. Tarring throughout the whole measuring range allows to determine the net mass of measured loads.

The PUE C/31H/EX series indicator consists of:

- Main PCB (scale)
- Stainless steel housing
- Power supply connector
- Input cable gland (from weighing platform)
- Functional grounding clamp
- Overlay
- Indicator holder

View - dimensions



Dimensions of PUE C/31H/EX indicator.

PUE C/31H/EX technical data:

PUE C/31H/EX	
Housing type	stainless steel
Ingress Protection Rating	IP66/67
Display type	LCD
Keyboard	Microswitch (500 000 cycles)
OIML class	III
Maximum quantity of A/D converter divisions	8388608
Number of verification intervals	6 000
Maximum input voltage	19,5 mV
Maximum voltage per verification interval	3,25 μV
Minimum voltage per verification interval	1 μV
Ambient temperature	-10 °C ≤ ta ≤ 40°C
Minimum load cell impedance	125 Ω
Maximum load cell impedance	1200 Ω
Connection of load cell	4 or 6 cables + shield
Number of ranges	1 or 2 ranges
Power supply - **DC IN** connector pin 1(4) pin 2(3)	
Ui=9V	
Ii=0,24A	
Pi=0,6W	
Ci≈0	
Li≈0	
I/O marking **+5V, E, AGND, REF+, REF-, +IN, -IN** Parameters identical for each clamp	
Uo=7,14V	
Io=0,24A	
Po=0,52W	
Li≈0	
Ci=6uF	
Lo=40uH	
Co=10nF	
DESIGNATION	II 2G Ex ib IIC T4 KDB 06ATEX250

2. SECURITY REQUIREMENTS

Please read this manual carefully prior the first usage. Following the instruction, use the device as intended;

PUE C/31H/EX indicator, and scales with design based on the indicator, can be used in explosive zone 1 and 2 where there is a mixtures of gases, vapours and mists of II (second) explosion group and T1, T2, T3 or T4 temperature class.
WPT……/EX and WTC……/EX scales, because of the construction of non-electric part of the platform and used materials, can be operated in 1 and 2 zone where there are mixtures of gases, vapours and mists of IIA, IIB, or IIC group – according to „Technical Documentation" of the scale.

Anti-explosive safety of the PUE C/31H/EX indicator, and of scales with design based on the indicator is assured by:

- Power supplied from the ZRi02 power supplier Ex II (2) G [Ex ib] IIC KDB 06ATEX251 manufactured by RADWAG, placed behind the hazardous area or from another adapter with appropriate parameters of intrinsically safe electrical circuit.
- Intrinsically safe design of PUE C/31H/EX indicator complying with:
  EN 60079-0 and EN 60079-11 standards, confirmed by
  KDB 06ATEX250 certificate
- Using load cells certified for conformity with ATEX directive (on anti-explosion safety)
- Making non-electric parts pf the scale in compliance with EN 13463-1 standard
- **Observing recommendations in this manual by users**

- marking of paragraphs crucial for anti-explosion safety

2.1. ATEX marking – symbols meaning

II 2 G Ex ib IIC T4 Gb

Equipment group:
I – underground parts of mines
II – all other places liable to be endangered by explosive atmospheres

Categories for group II equipment:
1 - the device assures a very high protection level,
- to be operated in zones 0,1,2
2 - the device assures a high protection level,
- to be operated in zones 1,2
3 - the device assures a standard protection level,
- to be operated in zone 2

Explosive atmosphere:
G – caused by gas, vapor and mist.
D – caused by dust.

Electrical equipment - compatible with one or few kinds of anti-explosion designs

Symbol of the used anti-explosion design type:
o – oil protection
p – gas protection with an excess pressure
q – sand protection
d – flame-proof protection
e – strengthened design
ia - intrinsically safe design for operation in zone 0,1,2,
ib - intrinsically safe design for operation in zone 1,2,

Gas explosiveness group - examples:
-IIA: propane (T1)
benzene (T3)
butane (T2)
ethanol (T2)
-IIB: ethylene (T2)
-IIC: acetylene (T2)
hydrogen (T1)

Temperature class – surface max temperature of the equipment parts that are in touch with explosive mixture:

T1: 450^{0}C
T2: 300^{0}C
T3: 200^{0}C
T4: 135^{0}C
T5: 100^{0}C
T6: 85^{0}C

Temperature class of the gas or vapor auto ignition:
T1: > 450^{0}C
T2: > 300^{0}C
T3: > 200^{0}C
T4: > 135^{0}C
T5: > 100^{0}C
T6: > 85^{0}C

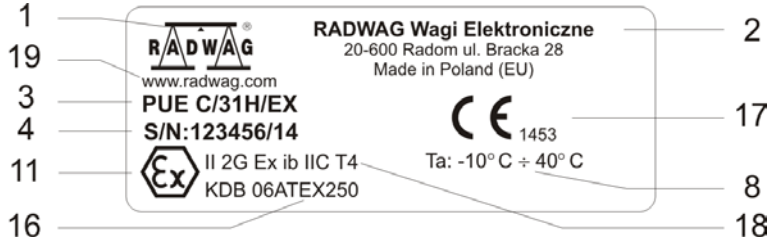
Security level
Gas atmosphere:
- Ga
- Gb
- Gc
Dust atmosphere:
- Da
- Db
- Dc

PUE C/31H/EX indicator is a device of group II with „ib” protection therefore “**Gb**” protection symbol may be omitted.

2.2. Rating plates for indicator and scales

Rating plate of the scale (exemplary)

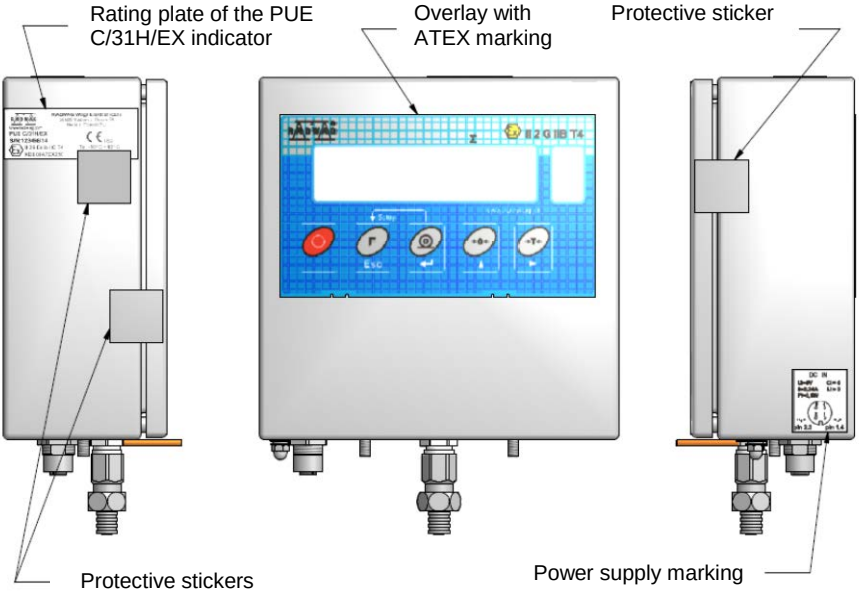
Rating plate of the PUE C/31H/EX indicator

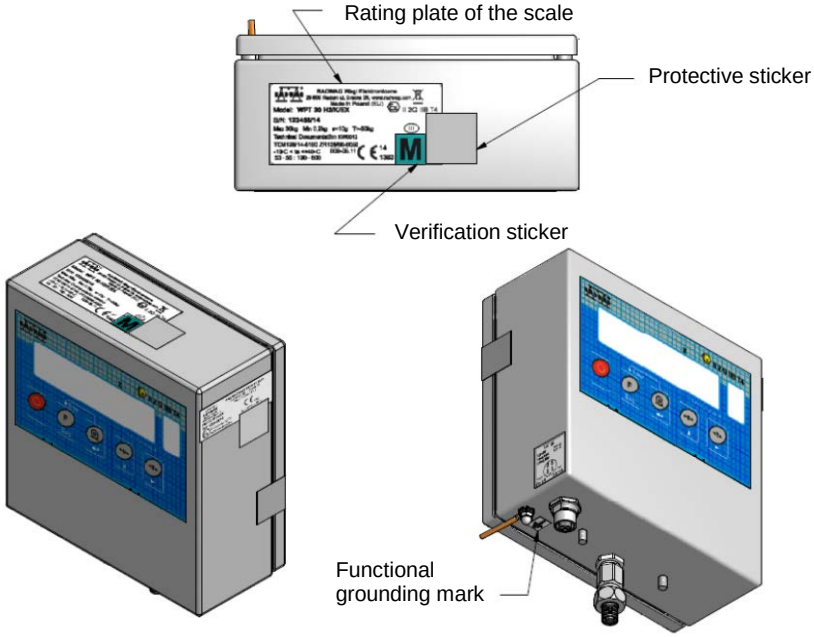


1 – Manufacturer’s Logo
2 – Name and phone number of the manufacturer
3 – Scale type, indicator type
4 – Factory number
5 – Metrological parameters of the scale
6 – Technical Documentation number
7 – Type approval certificate number (for verified scales)
8 – Ambient temperature
9 – geographical zone, ie. latitude and longitude data and the height above the level – only verified scales

10 – WEEE symbol
11 – ATEX marking relating to the scale (see point 2.1)
12 – EX marking stating that the device is intended for operation in explosive areas
13 – accuracy class marking
14 – certificate number of used load cell
15 – CE marking with two last digits of the year of production and with a number of notified body for NAWI directives
16 – ATEX certificate number relating to an indicator
17 – CE marking with the number of a notified body supervising EX device production
18 – ATEX marking relating to the indicator (see point 2.1)
19 – manufacturer website address

2.3. Placement of information stickers





3. START-UP

Please read this manual carefully prior the start-up. Following the instruction, use the device as intended.

3.1. Scale placing

- The scale should be unpacked outside the hazardous area.
- Before moving the scale to the place of operation prepare a cable for earthing the device against electrostatic charges.

NOTICE!!
In order to protect the indicator against gathering electrostatic charge it is necessary to earth/zero its housing.
Connect the earthing lead/wire to cable connection points marked with „ ⏚ ” . See the manual for details about earthing.

- Situate scales and an indicator in hazardous area and connect earthing/zeroing.

NOTICE!

Mounting the indicator, placing the weighing platform and earthing/zeroing should be performed when the explosive atmosphere cannot appear.

Indicators with cable can be mounted on the rack, on the wall or on the table using a special mounting kit.

Weighing platform should be placed on even and stable ground far from sources of hit and draughts. It should be also levelled out using the feet.

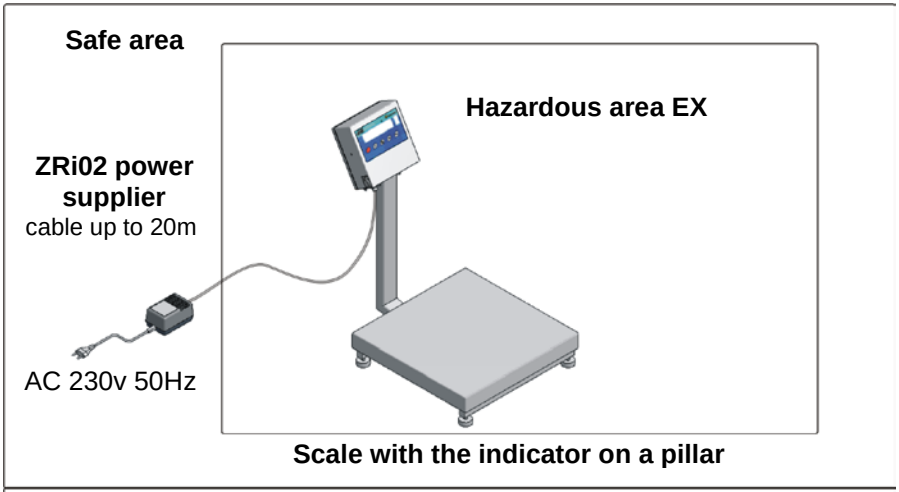
3.2. Connecting power supplier

1. Place the power supplier outside the hazardous area.
2. Connect the plug that terminates the supply cable (up to 20m) to the socket marked as **DC IN.**
3. Connect the supplier to mains (230V AC).
4. In case of not using the scale unplug it from the mains.

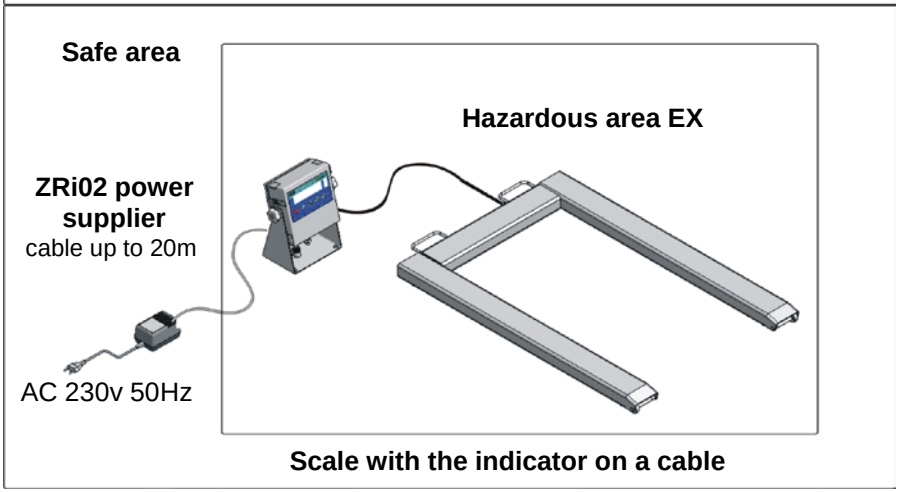
NOTICE!

Scales with PUE C/31H/EX indicators can be supplied only from ZRi02 power suppliers Ex II (2) G [Ex ib] IIC KDB 06ATEX251 of RADWAG production, placed outside the hazardous area, or from another supplier characterized by below presented parameters of intrinsically safe electrical circuit.

Intrinsicaly safe circuit parameters for power supplier used for PUE C31H/EX indicator		
U_o	8,61	V
I_o	0,24	A
P_o	0,52	W
Um	255	V
L_o	200	uH
C_o	5,7	uF
L_i	≈0	uH
C_i	≈0	uF

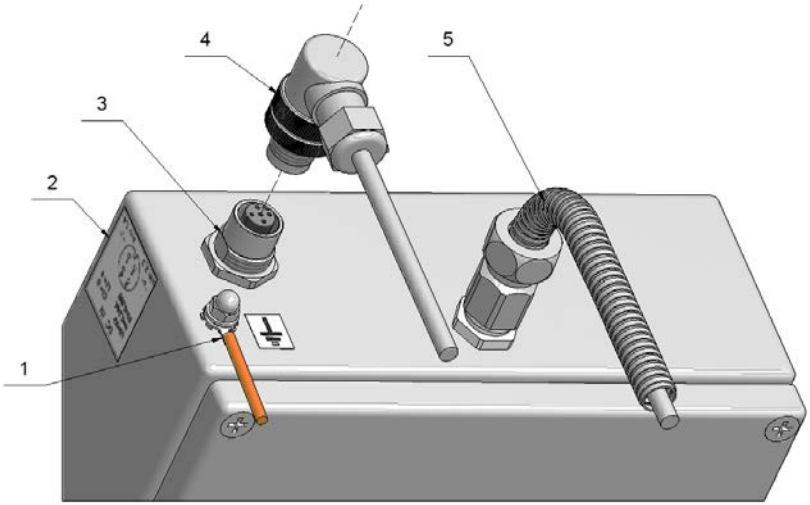


Scale with the indicator on a pillar

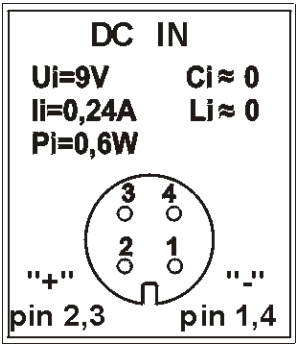


Scale with the indicator on a cable

Supplier connection



1 – earthing terminal
2 – power supply socket description
3 – power supply socket
4 – power supply socket
5 – screened load cell cable



Power connector parameters

3.3. Switching on

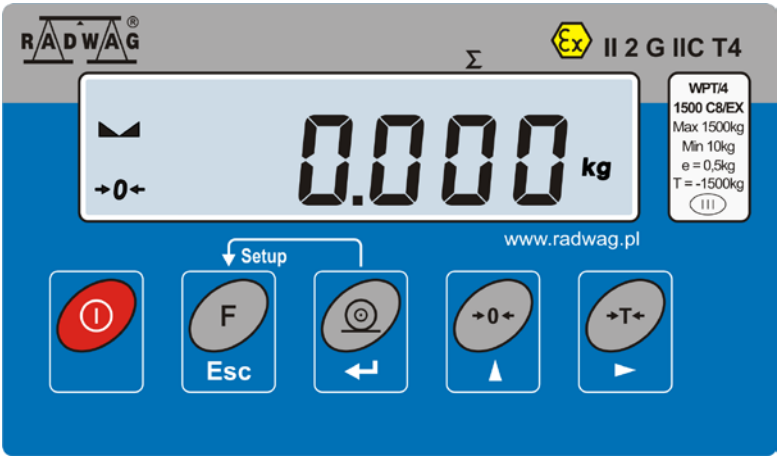
- Press the ON/OFF key – keep pressing for about 1 sec.
- After switching on, wait for the test completion.
- **The indication shall equal zero** and the following pictograms shall be seen:

  →0← - zero indication

  - equilibrium

  kg - weighing mode

- If the indication does not equal zero press the zeroing key .



Ready to use.

4. CLEANING

Cleaning can be performed only after unplugging from mains (230V AC). Use agents and materials that do not cause gathering electrostatic charges on elements of the scale!

Do not use abrasive agents and solvents because it can cause damage of the casing.

Cleaning should be performed when the appearance of explosive gases is impossible

5. SERVICE AND REPAIRING

In case of any problems with appropriate operation of the indicator, contact the manufacturer's service centre or any service centre authorised by RADWAG.
In case of any fault or dysfunction the device should be passed to the manufacturer's service centre or, if this is not possible, the fault should be reported in order to settle the conditions of repair.

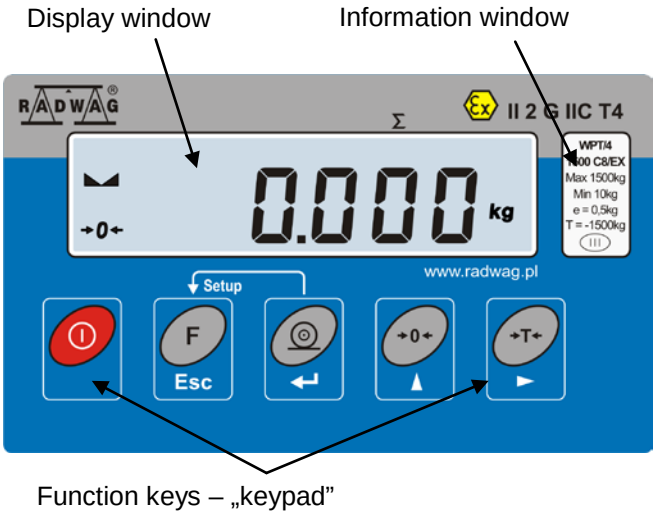
Any intrusion (alteration, repair etc.) in the indicator or scale based on PUE C/31H/EX indicator, by unauthorised persons will cause a forfeiture of validity of certificates, declarations and manufacturer's warranty.

6. FUNCTIONS

- Filtering
- Autozero
- Minimal mass
- Counting pieces
- +/- control
- Deviation in per cents
- Peak hold
- Automatic tare
- Tare memory
- Manual tare inscription
- User's calibration
- Totalizing

It is possible to disable selected functions thus making the scales adjusted to one's own needs. Access may be permitted to some particular functions only if required. The user menu allows enabling/disabling a given parameter, see the further part of the manual.

7. KEYBOARD



8. FUNCTINS OF KEYS

Power on/off – keep it pressed for about 1 sec

Function key (selection of operation mode)

Confirmation of changes

- zeroing

- tarring

NOTICE:

Pressing and keys results in change of particular keys functions, wherein the change is valid until setting parameters procedure is completed. See the further part of the manual for details.

9. INSCRIPTIONS AND PICTOGRAMS

O.n.	Inscription	Description
1.	FIL	Filtering level
2.	PCS	Parts counting
3.	HiLo	+/- control in relation to reference mass
4.	**Auto**	Control and correction of zero indication of scale
5.	**toP**	Measurement of max. force influencing weighing pan
6.	**Add**	Totalizing
7.	→0←	Scale in autozero range (indication = precise zero)
8.		Result of measurement is stable (ready for readout)
9.	PCS	Scale in operating mode **counting pieces**
10.	kg (g)	Scale in operating mode **weighing**
11.	Net	Scale is tarred.
12.	**Min**	+/- control in relation to reference mass – setting lower threshold or mass below first range
13.	**OK.**	+/- control in relation to reference mass: mass of load between set threshold
14.	**Max**	+/- control in relation to reference mass – setting upper threshold or mass above upper threshold.

10. USER MENU

The menu is divided into 5 basic groups. Each group has its individual name starting with the capital letter **P.**

P1 rEAd
P 1.1 Fil | 2
P 1.2 Auto | YES
P 1.3 tArA | no
P 1.4 Fnnd | no
P2 Prnt
P2.2 S_Lo |

P3	**Unit**		
	P3.1	StUn	kg
P4	**Func**		
	P4.1	FFun	ALL
	P4.2	Funi	no
	P4.3	PcS	no
	P4.4	HiLo	no
	P4.5	PrcA	no
	P4.6	Prcb	no
	P4.7	AtAr	no
	P4.8	toP	no
	P4.9	Add	no
P6	**CAL**		
	P6.1	St_u	* FUNCTION *
	P6.2	uCAL	* FUNCTION *

11. BROWSING USER'S MENU

User moves in the menu using the scale keyboard.

11.1. Keypad

+

entering the main menu

+

inscribing tare value

selecting parameter of a given menu level or changing the active parameter value

entering selected submenu or activation of a parameter for modification

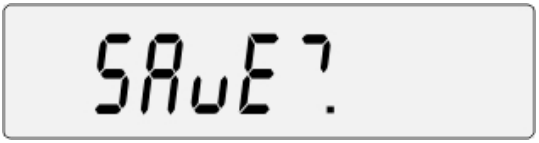
change confirmation

leaving a function without changes or moving one level higher in the menu

11.2. Return to weighing

NOTICE:
Changes introduced into the scale memory will be permanently saved after return to weighing.

Press **F** key (F / Esc) several times, keep pressing until message **<SAvE?>** is seen.



Return to weighing

Upon noticing the message press: (↵) key – for changes confirmation or (F / Esc) key – for resigning. After completion of this procedure the scale returns to weighing.

12. WEIGHING

Place a load on a weighing pan. After noticing stability pictogram, , read the weighing result.

12.1. Tarring

In order to determine a net mass, deposit a package of load on a pan and wait for the indication to be stable, next press **TARE** key - (→T←) (indication goes back to zero, **Net** symbol is displayed on the left side of the display).

After depositing a load on a pan, the display indicates net mass. Tarring can be done repeatedly in full weighing range of the scale. When using tare

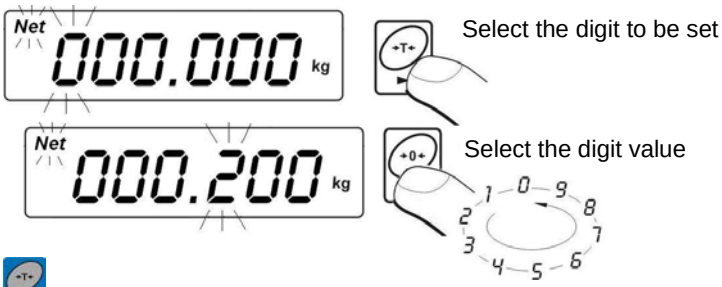
function pay attention to maximum weighing range, it cannot be exceeded. After removing the load and the package, display shows indication of sum of tarred weights with minus sign.

NOTICE:
Tarring may not be performed when minus value or zero is displayed. In such a case the display shows ***<Err3>*** *message, short sound signal is heard.*

12.2. Tarring by inscribing tare value

It is possible to inscribe a tare value.
Procedure:

- Press simultaneously and keys
- On the display you will see:



– select the digit to be set

– select the digit value

- Using and keys set **tare value**,
- Press ,
- The scale returns to the weighing mode and the value of tare is displayed with the "–" sign,
- Tare value can be inscribed any time in weighing mode.

NOTICE:
*Tarring by inscribing tare value cannot be performed when the tare value has already been implemented into the scale memory. In such a case the display shows **<Err3>** message, short sound signal is heard.*

12.3. Zeroing

In order to zero the indication press zeroing key - . Zero value is shown on a display next to symbols: →0← and ◣◢.

The new zero point is treated by the scale as the precise zero. Zeroing is possible while stable status is shown on the display.

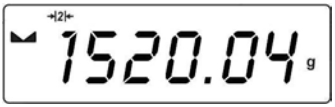
NOTICE:
*Display status zeroing is possible only in range up to **±2%** of maximum scale capacity. If zeroed value is bigger than **±2%** of maximum capacity, display shows **Err 2** message, short sound signal is heard.*

12.4. Weighing for two range scales

Switching from the **I range** to the **II range** is carried out automatically after exceeding the switching point value (Max of the **I range**).

Weighing in the II range is signalled by a pictogram, located in the upper left-hand corner of a display.

After unloading, the scale returns to zero. Weighing in the **II range** takes place until unloading the pan.



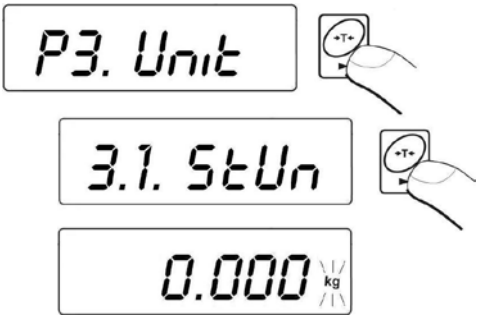
II range weighing automatically turns to **I range** weighing after taking the load off the weighing pan when the scale returns to AUTOZERO zone – the →0← pictogram is seen.

12.5. Setting a basic weighing unit

The user may set a weighing unit to be active after turning on the scales.

Procedure:

- Following point 11 of this manual enter **<P3.Unit>** submenu, next:



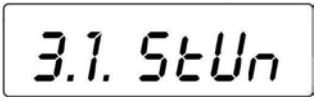
- Press key several times to view available units:

Selection:

A. When the basic unit is set to [kg], users can toggle between: [kg, lb, N]. For verified scales *[lb] is not accessible*.

B. When the basic unit is set to [g], users can toggle between: [g, ct]. For verified scales *[lb] is not accessible*.

- Upon unit selection press key, wait for the scales to return to the following window:



Save changes and return to weighing:

See point - 11.2. – return to weighing.

NOTICE:

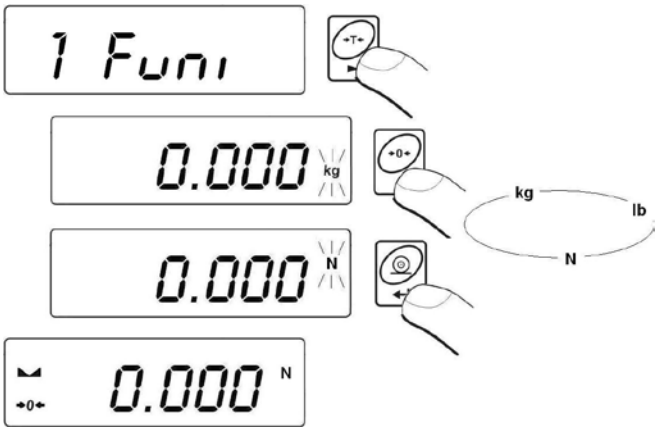
Upon activation the scale operates with a set basic unit.

12.6. Temporary weighing unit

This function allows users to choose unit for indication.
The unit is valid until the scale is switched off or until another unit is chosen.
In order to perform the following procedure, operation mode <P4.2.Funi> must be accessible, see point 14.1.1 – Enabling operating modes.

Procedure:

- Press **F** key , next:



- Confirm selection of a given unit and wait for the scale to return to weighing.

Selection:

A. When the basic unit is set to [kg], users can toggle between: [kg, lb – not accessible for verified scales, N].
B. When the basic unit is set to [g], users can toggle between: [g, ct, lb – not accessible for verified scales].

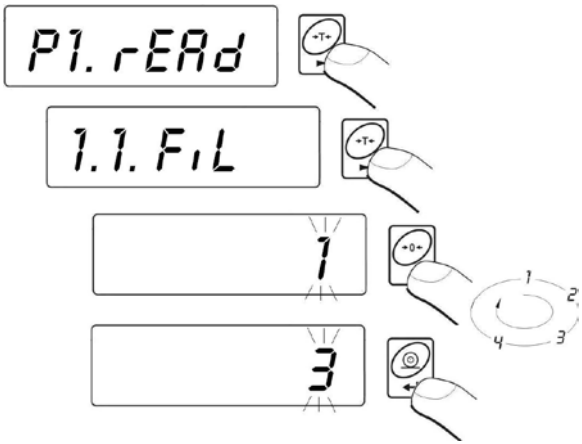
13. MAIN PARAMETERS

User can adjust the scale to external ambient conditions (setting filters) or individual requirements (autozero, tare value). Respective parameters can be found in <**P1.rEAd**> parameters group.

13.1. Adjustment of filtering level

Procedure:

- Following point 11 of this manual enter **<P1.rEAd>** submenu, next:



1 - 4 - filtering levels to be selected (depending on the ambient conditions)

Return to weighing:

See point - 11.2. – return to weighing.

NOTICE:

The higher filtering level the longer stabilisation time.

13.2. Autozero

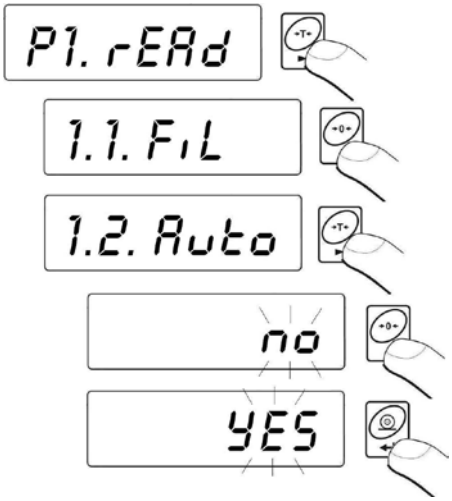
„AUTOZERO" function has been introduced in order to ensure precise indication. The intended use of this function is automatic control and correction of zero indication.

When function is active comparison of results takes place at specified time intervals. If results differ by value smaller than declared AUTOZERO range, e.g. one division, scale is zeroed automatically, stable state is marked – ▁◢ and zero indication – →0← is displayed.

When AUTOZERO function is enabled, each result starts from precise zero. However there are some cases when this function can disturb measurement, e.g. very slow process of load depositing on the pan (load pouring). In such case, correction system for zero indication can also correct indication of real mass of load.

Procedure:

- Following point 11 of this manual enter **<P1.rEAd>** submenu, next:



AUTO no - autozero disabled
AUTO YES - autozero enabled

Return to weighing:

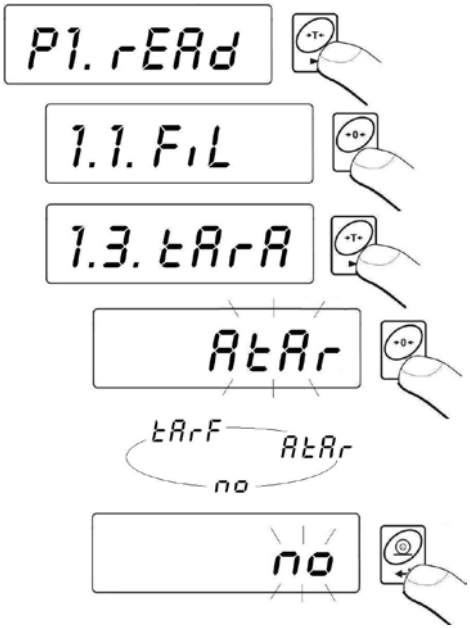
See point - 11.2. – return to weighing.

13.3. Tare function operation

This function enables the user to set appropriate parameters (depending on needs) for tare function.

Procedure:

- Following point 11 of this manual enter **<P1.rEAd>** submenu, next:



tArA **AtAr** - **automatic tare function on -** stored in scale memory after unplugging it from mains (see point 15.5 for description);

tArA **no** - **automatic tare function off** (scale tarring by means of **T** key)

tArA **tArF** - **tare memory function** – stores last value of tare in scale memory. It is automatically displayed after starting the scale.

Return to weighing:

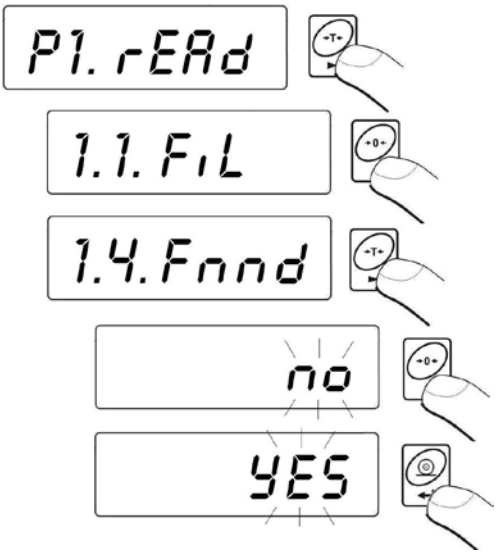
See point - 11.2. – return to weighing.

13.4. Median filter

The role of the median filter is to eliminate short lasting interference (e.g. mechanical shocks).

Procedure:

- Following point 11 of this manual enter **<P1.rEAd>** submenu, next:



Fnnd **no** - median filter disabled
Fnnd **YES** - median filter enabled

Return to weighing:

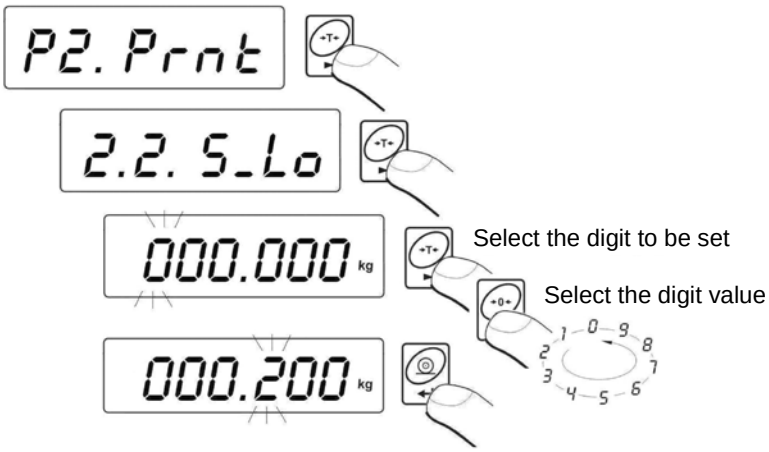
See point - 11.2. – return to weighing.

13.5. Determining the minimal load

S_Lo parameter works for automatic tare**.**
The rule is that no automatic tare is performed until the indication drops below **S_Lo** value (gross).

Procedure:

- Following point 11 of this manual enter **<P2.Prnt>** submenu, next:



Return to weighing:
See point - 11.2. – return to weighing.

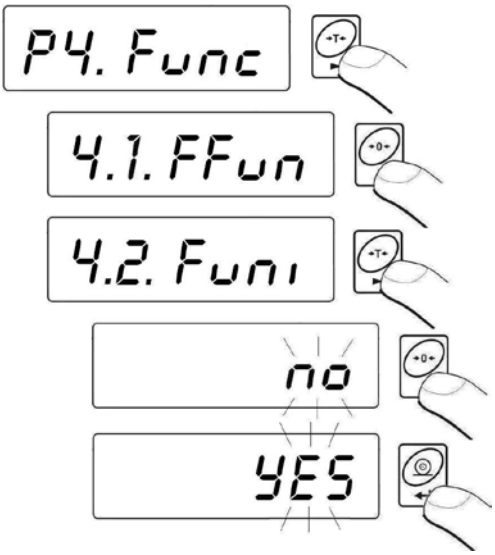
14. OPERATION MODES

14.1. Enabling operating modes (functions)

In this group of parameters users declare functions they want to use after pressing **F** key - F Esc while in weighing mode**.**

Procedure:

- Following point 11 of this manual enter **<P4.Func>** submenu, next:



no - mode disabled
YES - mode enabled

NOTICE:
Enabling procedure for other operation modes is analogous to the one described above.

Return to weighing:
See point - 11.2. – return to weighing.

14.2. Determining number of accessible modes

The user may decide whether upon pressing **F** key

all the operation modes are to be accessible (option **<ALL>**), or only one, selected out of the list.

Procedure:

- Following point 11 of this manual enter **<P4.Func>** submenu, next:

Return to weighing:

See point - 11.2. – return to weighing.

14.3. Counting parts of identical weight

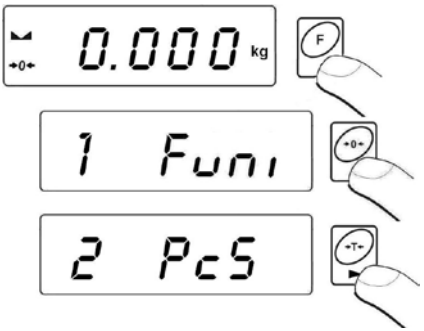
The standard solution is equipped with option of counting small pieces of the same mass. If parts counting is to be performed in a container, its weight must be recorded into the scale memory (the container must be tarred).

NOTICE:

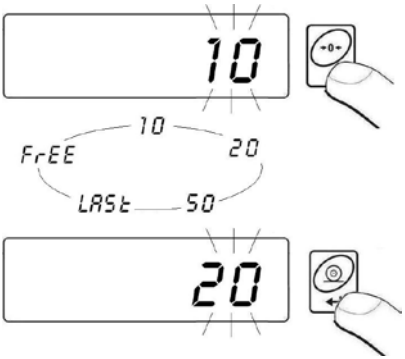
1. *Counting pieces mode does not operate with other functions,*
2. *Parts counting function is not active after scale's restart.*

Procedure:

- Enter **<PcS>** submenu (first make the operation mode accessible - see point 14.1):



- The blinking value on the display informs of quantity of a sample. By means of key, set quantity of a sample and press key to confirm:

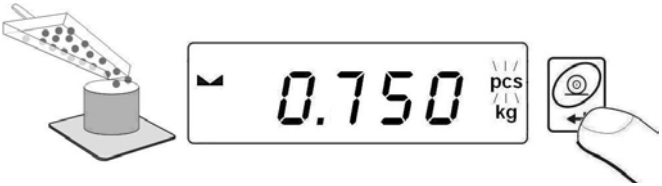


- If option **<LASt>** has been chosen than the most recent weight value of a single piece is displayed for 3 sec., the program proceeds to **Parts Counting** mode automatically setting the previously displayed value.

- If option **<FrEE>** has been chosen, the program displays the following window:

- Using and keys, enter the demanded quantity of sample, where: - selection of the digit to be set, - selection of the digit value,
- Press key for confirmation,
- **<LoAd>** message is displayed, the following window is seen:

- If pieces are to be weighed in a container, it is necessary to tare it, next declared number of pieces must be put onto the weighing pan, their mass confirmed after stabilization of the indication (symbol ◣◢ on a display):



- The program automatically calculates weight of a single element and proceeds to the **Parts Counting** mode displaying number of weighed elements (**pcs**):

NOTICE:

1. *If the user presses the* *key when there are no elements on the pan, the message* ***-Lo-*** *is indicated for a few seconds and the scale automatically returns to weighing.*
2. *In order to obtain reliable results, it is recommended to load the weighing pan with elements, mass of which is greater than 5 reading units.*

3. *If a single element weight is not greater than a reading unit, then message **<Err5>** is shown on the scale display (see point 19. Error Messages), short sound signal is heard, next the scale returns to weighing.*

Function deactivation:

*Press **F** key* *twice.*

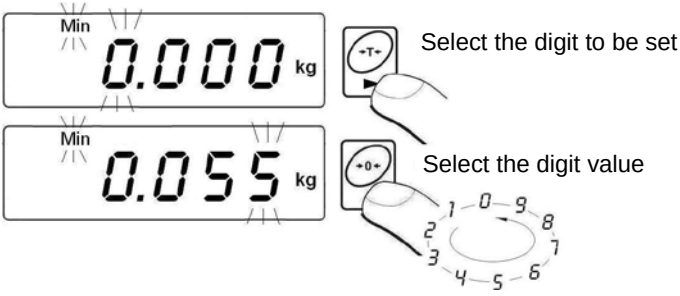
14.4. +/- control referring to the inscribed standard mass

The program allows entering checkweighing threshold values (**Min**, **Max**.

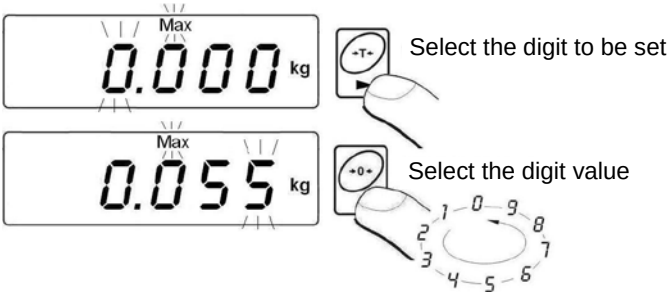
Procedure:

- Enter **<HiLo>** function (first make the operation mode accessible - see point 14.1):

- The program proceeds to window for setting the lower threshold (**Min**):

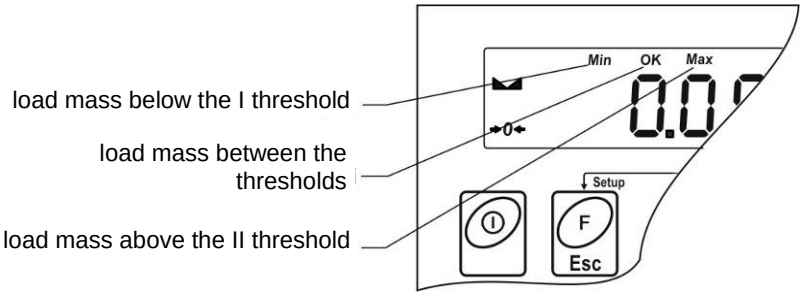


- Press key to confirm, the program proceeds to window for setting the upper threshold (**Max**):



- Press key to confirm, the program automatically returns to weighing with threshold values recorded into the memory.

- During setting the threshold values the following cases take place:



NOTICE:

If a user erroneously enters a value of the lower threshold higher than the upper one, the scale indicates an error message and returns to weighing.

Function deactivation:

*Press **F** key twice.*

14.5. Per cent deviation with reference to standard mass

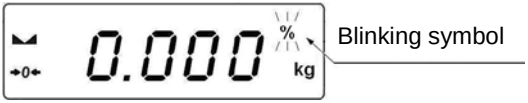
This program allows to measure deviation in per cent with reference to a standard mass. The standard mass can be estimated by weighing (**PrcA** function) or inscribed by a user (**PrcB** function).

14.5.1. Mass standard weight determined by the measuring process

Procedure:

- Enter **<PrcA>** function (first make the operation mode accessible - see point 14.1):

- Message **<LoAd>** is displayed, the following window is seen:



- On a weighing pan place the load, mass of which is to be taken as a standard, upon stabilization of the indication (symbol displayed) press key for confirmation,
- The scale display shows indication **100,000%**,
- From this moment display will indicate weight deviation of load placed on a pan, wherein the said deviation is referred to the mass of standard (in %):

Function deactivation:

*Press **F** key* *twice.*

14.5.2. Standard mass inscribed to scale memory

Procedure:

- Enter **<Prcb>** function (first make the operation mode accessible - see point 14.1):

- The program proceeds to the following window:

- Using and keys, set the **mass standard weight**, where: - selection of the digit to be set, - selection of the digit value
- Press key for confirmation,
- The scale display will show indication **0,000%**,
- From this moment display will indicate weight deviation of load placed on a pan, wherein the said deviation is referred to the mass of standard (in %).

Function deactivation:

*Press **F** key* *twice.*

14.6. Automatic tare

This function is useful for fast net mass determination of weighed load when the tare value for each next load to be weighed is different. In case when the function is active the cycle of scales operation looks as follows:

- press zeroing key when the pan is empty,
- place the container for pieces,
- when indication is stable, **automatic tarring** of the container mass gets started (**Net** marker appears in the upper part of the display),
- place a sample in the container,
- display indicates net mass of a sample,
- remove the sample together with the container,
- scale displays zero indication (zeroing),
- place a container for the next sample. When indication is stable automatic tarring gets started (**Net** marker appears in the upper part of the display),
- place next sample in the container.

Activation procedure:

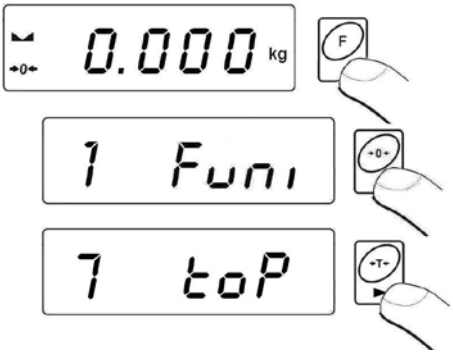
Function deactivation:

*Press **F** key* *twice.*

14.7. Measurement of the max force – peak hold

Procedure:

- Enter **<toP>** function (first make the operation mode accessible - see point 14.1):



- **Max** pictogram visible in upper part of the display is a confirmation of **toP** function activation:

- Apply a force to the weighing pan. The display of scale will latch the maximum value of the force.
- Remove loads from the pan.
- Before next measurement press .

Function deactivation:

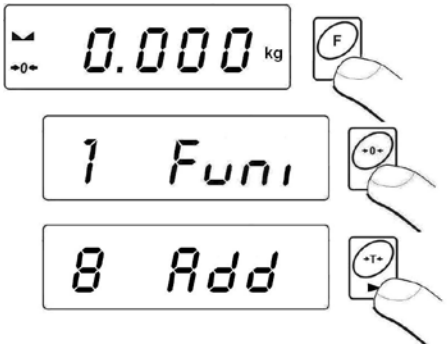
*Press **F** key twice.*

14.8. Totalizing

The program enables totalizing the mass of weighed loads and the totalized mass printout (for EX scales the printout is disabled).

14.8.1. Operation mode activation procedure

- Enter **<Add>** function (first make the operation mode accessible - see point 14.1)

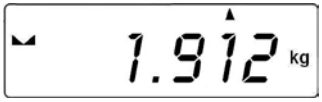


- „**P”** letter visible on the left of the display is a confirmation of **<Add>** function activation:

14.8.2. Totalizing procedure

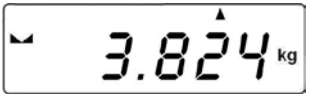
- Following point 14.8.1 enter **<Add>** function,
- Place the first load on a weighing pan. If the load is to be weighed in a container, it is necessary to tare it before putting the first load into it,

  its mass must be confirmed by pressing key after stabilization of the indication (symbol on a display),
- Sum of weighings is displayed („▲” pictogram in the upper right-hand corner of the display).



- Take off the load , the scale indication returns to **ZERO,** letter „**P**” appears on the left,
- Place next load on the pan,

- Upon indication stabilization press key, sum of the first and second weighing is displayed („▲” pictogram in the upper right-hand corner of the display):



- In order to finish the procedure of totalizing, press (either with a load on the pan or after taking it off):

- If the key is pressed again while load is being placed on a weighing pan, the sum of previously performed measurements is deleted, **<unLoAd>** message is displayed - unload the pan to return to **ZERO** . Letter „**P**” will appear. The scale is ready for the next totalizing procedure.

- If the key is pressed again while load is not being placed on a weighing pan, the sum of previously performed measurements is deleted, the scale is ready for the next totalizing procedure.

14.8.3. Storing the last sum of weighings

After interrupting the procedure of totalizing (e.g. turning off the scale) it is possible to restart with the last sum of weighings. In order to do it:

- enter **<Add>** function (see point 14.8.1),
- last sum of weighings is seen on the display, the displayed value comes from the scale memory,
- press key in order to continue totalizing, the indication returns to **ZERO** and the letter „**P**” appears on the display; next load may be placed on the scale.
- press , or key in order to finish totalizing, the letter „**P**” appears on the display; the scale is ready for the next totalizing procedure.

NOTICE:

In case of a display range overflow in totalizing, the program displays error ***<5-FULL>****. The user must either take the load off the pan and press* *key in order to complete totalizing or replace the load with another one (of lower mass) not resulting in display range overflow.*

Function deactivation:

Press ***F*** *key* *twice.*

15. ADJUSTMENT

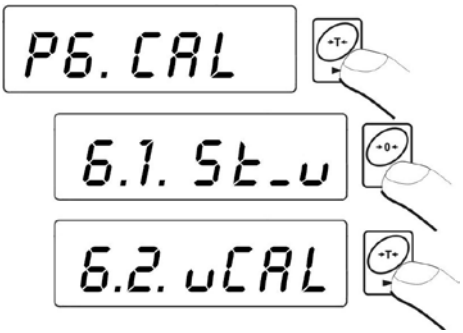
Only for verified scales

In order to ensure perfect weighing accuracy it is required to introduce into the scale memory a factor correcting the indications – it is so called adjustment. Adjustment should be performed when the user starts weighing or when dynamic change of temperature occurs. Before starting the procedure, loads should be removed from the pan.

15.1. Adjustment procedure

Procedure:

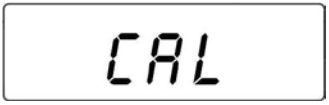
- Following point 11 of this manual enter **<P6.CAL>** submenu, next:



- The following messages are displayed:

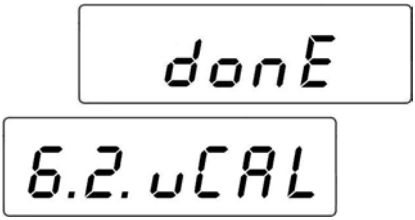
- A new start mass is adjusted during this period of time. After that a mass of calibration weight is shown (e.g. 3 000kg).

- Put the calibration weight on the weighing pan and press key, adjustment process starts, the following message is seen:



- The **<unLoAd>** message informs about adjustment process completion:

- Take off the load, message **<donE>** is displayed for 1 sec., the scale shows the adjustment submenu name:



- Adjustment process may be interrupted at any time by pressing F Esc key, the following message informs about abortion of a process:

NOTICE:

1. *It must be remembered to perform calibration when the pan is unloaded!*
2. *If the adjustment takes more than 15 sec. the program displays an error message* ***<Err8>,*** *short sound signal is heard. Press F Esc key and perform the adjustment again simultaneously maintaining as stable ambient conditions as possible!*

Save changes and return to weighing:

See point - 11.2. – return to weighing.

15.2. Start mass estimation

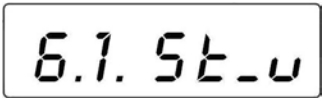
If the scale does not require the full calibration process, or if the user lacks demanded number of mass standards, it is possible to adjust only a new start mass.

Procedure:

- Following point 11 of this manual enter **<P6.CAL>** submenu, next:

- the program displays the following set of messages:

- upon completion of the start mass estimation process the scale shows the parameter name:



- start mass estimation process may be interrupted at any time by pressing Esc key, the following message informs about abortion of a process:

NOTICE:

If the start mass estimation takes more than 15 sec. the program displays an error message ***<Err8>,*** *short sound signal is heard. Press Esc key and perform the adjustment again simultaneously maintaining as stable ambient conditions as possible!*

Save changes and return to weighing:

See point - 11.2. – return to weighing.

16. ERRORS

Err2	-	Value beyond the zero range
Err3	-	Value beyond the tare range
Err4	-	Calibration mass or start mass beyond the acceptable range (±1% for weight, ±10 for start mass).
Err5	-	Mass of a single piece lower than the scale division.
Err7	-	Power down time was to short (should be over 3s)
Err8	-	Operation time exceeded (tarring, zeroing, start mass estimation, adjustment)
null	-	Zero value from the AD converter
FULL2	-	Measurement range overflow
LH	-	Start mass error, the mass on the weighing platform is beyond the acceptable range (from -5% to +15% of start mass)
5–FULL	-	Display range overflow in totalizing

NOTICE:

1. *The user is informed about occurrence of errors **Err2**, **Err3**, **Err4**, **Err5**, **Err8**, **null** by means of a short sound signal (1 second).*
2. *Error **FULL2** is signalled by a sound signal lasting until the over excessive load is taken off the pan.*

17. RESPECTIVE STANDARDS

PUE C/31H/EX indicator is manufactured in accordance with the following standards:

- EN 61326-1:2006 *Electrical equipment for measurement, control and laboratory use - EMC requirements -- Part 1: General requirements,*
- EN 61010-1:2011 *Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements,*
- EN 60079-0:2013 + A11:2014-03 *Explosive atmospheres -- Part 0: Equipment – General requirements,*
- EN 60079-11:2012 *Explosive atmospheres -- Part 11: Equipment protection by intrinsic safety "i".*

MANUFACTURER

OF ELECTRONIC EQUIPMENT

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